ASSESSMENT FORM
Operations and Work Control

Functional Area: SME	Objective No.: 2	Date: Sept.19, 2000

OBJECTIVE: Contractor procedures provide a method to ensure that controls are implemented during facility, project and experiment operations. The procedures ensure that adequate controls to mitigate the identified hazards to the worker, the public and the environment are effectively implemented. Contractor procedures provide assurance that controls will remain in effect so long as the hazards are present. Line managers are responsible for safety; clear roles and responsibilities have been established; and there is a satisfactory level of competence. (CE I-5, CE I-7, CE I-8, CE II-2, CE II-3, CE II-4, CE II-5, CE II-6)

Criteria

1. Contractor procedures for planning and conduct of operations, including programmatic experimental activities, are in place and ensure: (1) the scope of the work is defined, (2) work planning includes adequate hazards identification and analysis from all appropriate disciplines; (3) appropriate controls to the tasks being performed are developed with worker involvement; and (4) these controls are integrated at the workplace with other safety disciplines and with the mechanisms or processes for gaining authorization to commence work.

2. Contractor procedures for conduct of operations, including programmatic experimental activities, are in place and effectively implemented to ensure that controls are implemented prior to commencing work and that these controls remain in effect so long as the hazard is present.

3. Contractor procedures are in place, implemented, and provide mechanisms or processes for gaining line management authorization to perform work.

4. Contractor mechanisms for the control of facility work and programmatic activities specify that line management is responsible for safety and are implemented.

5. Contractor personnel who plan, control, and conduct operations are required to have competence commensurate with the assigned responsibilities.

6. Contractor procedures for operations provide for feedback and improvement.

Approach

Record Review: Review the ISMS Description and Facility Safety Plans (FSPs) for the selected facilities. Review the appropriate ES&H Manual sections associated with development of FSPs, OSPs and other operational plans and procedures. Ensure these manuals of practice are implemented and provide for line management control of safety through scheduling and approval of operations within the selected facilities. Ensure the manuals of practice are implemented and

adequately specify processes to define all operations and programmatic work that are conducted within selected facilities or that appropriate directorate/facility level mechanisms are established. Evaluate the ES&H Teams' safety responsibilities and processes for overall safety and integration. Determine whether the ES&H Teams' provide adequate technical oversight to ensure that the range of hazards is addressed and serve as an adequate compensatory measure for the flowdown of technical requirements until the WSS and ES&H Manual is fully in place. Ensure that the sum total of mechanisms adequately identify and analyze hazards, and determine how, with worker involvement, controls are established, verified in place prior to performing work, and remain in place as long as the hazards are present. Confirm whether processes and practices for identifying the controls for work ensure that if unexpected conditions arise that have the potential for changing the hazards from those anticipated during the IWS development process, that work sill stop. Confirm that the controls are adequate to protect facility workers from the range of hazards, including lower-probability accidents. Review the processes for authorizing the commencement of work to ensure that managers fulfill their safety management responsibilities. Review the selection, training and qualification process for project and experimental operations to ensure that responsible personnel who plan, control, and conduct the work have defined and appropriate competencies.

Interviews: Interview personnel within the selected facilities' line and program organizations to further understand their responsibilities for implementing the requirements to plan and conduct programmatic and operational work. Through interviews, assess their understanding, support, and implementation of the approval, scheduling and control of operations within the approved controls. Determine their understanding of the potential for the hazards and risks to change with research activities and their understanding of the controls in place to control these risks. Assess the adequacy of the requirements for control of projects and experimental operations from programs not within DNT Division.

Observations: As available, observe all aspects of operational planning including definition of the work, walkdown of the task to define the hazards, preparation of the work procedures, pre-job briefing of the workers, gaining authorization to conduct the work, the pre-shift briefings of the workers and operators who will conduct the work and the post-job critique/lessons learned process. Evaluate the worker involvement in the work planning and feedback processes.

Record Review:

- Laser Programs Integrated Safety Management System Implementation Plan, August 2000, L-24943, Version No. 4.0
- Physics Directorate, Integrated Safety Management System Implementation Plan, August 25, 2000, Document No. PISMIP, Version 1.0, Rev. 5
- Chemistry and Material Sciences Integrated Safety Management System Implementation Plan, August, 2000, 330-r3
- Laser Programs Feedback and Improvement Plan, August 2000
- Laser Programs ISM Reference Guide, undated
- Facility Safety Plan, Building 197 Complex, Information Science and Technology (IS&T) Program, August 2000, Expires 9/03

- Operational Safety Plan (OSP) 298.25, Target Development, Fabrication, and Characterization, Expires 1/01
- ES&H Team 2 Integration Worksheet Hazard Assessment, B-298, IWS 05250001
- ES&H Manual Volume 1, Part 1, Laboratory and ES&H Policies, General Worker Responsibilities, and Integrated Safety Management, 8/21/00
- UCRL-MA-133867, ES&H Manual Volume 1, Part 2, Managing ES&H for LLNL Work, September 1, 2000
- Physics Directorate Integrated Safety Management System Handbook, April 12, 2000, Version 1.0, Rev. 3
- LTRAIN Training Records for ES&H Manager/NIF Programs, September 12, 2000
- LTRAIN Training Records for Alternate FPOC for Laser Programs, September 12, 2000
- LTRAIN Training Records for B-194 Responsible Individual, September 7, 2000
- LTRAIN Training Records for B-341 FPOC, September 16, 2000
- LTRAIN Training Records for B-341 Heavy Ion Fusion Lab Technician, September 16, 2000
- LTRAIN Training Records for B-341 ADFM
- LTRAIN Training Records for B-341 Responsible Individual for the Heavy Ion Fusion Lab
- LTRAIN Training Records for B-341 Alternate Responsible Individual
- Chemistry and Materials Science Visitor Safety, CMS 315-r6, August 2000
- P01702-whg-u-001, Physics Directorate Organization Chart, 9/00
- P01216-mnk-u-001, Physics N Division Organization Chart, 1/2000
- P01518-ird-u-001, Physics H Division Organization Chart, 4/11/00
- (Draft) Safety Assessment Document for the 100 MeV Electron-Positron LINAC Facility (B-194), February 3, 2000
- Memo of Understanding Between the Engineering and Physics Directorate, 1/26/00
- UCRL-M1-136502, Memorandum of Understanding for Physics Projects Funded Through CMS, 10/1/99
- Use of Physics Space Agreement for Building 194 Rooms 1051, 1111, 1112, 1116, 1117B, 1126, 3/29/99
- Additional Provisions of the MOU Governing Building 194/Room 1117B (Falcon Project), March 29, 1999
- Building 132 South Facility Occupancy Agreement Between the Nonproliferation, Arms Control, and International Security (NAI) Directorate and the Physics and Advanced Technologies (P&AT) Directorate, July 2000, Revision 0
- B-179 Hazard Screening Checklist Form, 7/21/00, Rev. 1
- B-179, LLNL Operation/Building Screening Report for Initial Hazard Classification, 7/10/00
- B-179/R1000, Quarterly Interlock Procedure, undated
- B-179/R1010&1020, Quarterly Interlock Procedure, undated
- IWS No. 179-0, Laser Operations, 8/15/00
- HC-T2-00-028, Change Memo for OSP 179.04, AMP Optics Development Laboratories, February 29, 2000
- IWS 990415-1023, IWS for Operation of Cold Wall Vacuum Furnace in B-194, 11/24/98, Rev 10
- IWS 990627-194-ODC, Notice to Proceed, 4/18/00
- IWS 000124-194-various, Notice to Proceed, July 00

- IWS 000124-194-various, IWS for Positron Material Science Program, July 00
- IWS 000131-194-1117B, Notice to Proceed, April 27, 00
- IWS 000131-194-1117B, Falcon Laser Lab Operations, April 27, 2000
- IWS 05250001, Servicing of Analytical Equipment by Outside Personnel, 6/6/00
- IWS 991013-194-1023, IWS for Rinsing of Tungsten Ribbons in a Dilute Mixture of Nitric and Hydroflouric Acid, Notice to Proceed, 11/4/99
- IWS 000321-194-B120, Laser Cleaning of Photocathode, 4/19/2000
- E-mail Memo from Todd Ditmire to Hank Glauser (Assignment of New Falcon RI), August 29, 2000
- Physics Procedure Book, H Division, no date
- Physics DefTrack Items, September 11, 2000
- Physics Directorate Self Assessment Reports, 1999-2000
- E-mail Memo from Bob Ehrlich to RIs (ES&H Third Quarter Report for RIs), 7/13/00
- E-mail Memo from Fred Holdener to Bob Ehrlich (RI ES&H Third Quarter Report), 7/14/00
- DOE Facility Profile Sheet for B-194
- DOE Facility Profile Sheet for B-179
- DOE Facility Profile Sheet for B-298
- DOE Facility Profile Sheet for B-132N
- UCRL-AR-132791, LLNL Integrated Safety Management System Description, Version 3.0, February 14, 2000
- LLNL Chronic Beryllium Disease Prevention Program, Revision 2, August 4, 2000
- BBRP Integrated Safety Management Systems Implementation Plan, Version 3.0, August, 2000
- BBRP Integrated ES&H Program Management Plan, April 10, 2000
- BBRP 1999 Annual ES&H Report for BBRP, May 30, 2000
- BBRP Self Assessment Plan, March, 2000
- BBRP Training Plan, March, 2000
- BBRP Safety Committee Functions and Responsibilities, undated
- BBRP Instruction 4.10 Receiving Biological Materials, August 15, 2000
- BBRP Building 360 Complex Facility Safety Plan (FSP), June, 2000
- BBRP Building 360 FSP Addendum 1, Biohazardous Operations, June, 2000
- BBRP Building 360 Complex 360 Addendum 360-2, Carcinogen Operations, June, 2000
- BBRP IWS No. 159, February 11, 2000
- BBRP IWS No. 172.01, August 17, 2000
- BBRP IWS No. 212, March 3, 2000
- BBRP IWS No. 161.01, August 28, 2000
- BBRP IWS No. 265, March 14, 2000
- BBRP ES&H Team 2 Discipline Action Plan, August, 2000
- UCRL-AR-137623, C&MS 110-r0, Return to Work Program, February 24, 2000
- UCRL-AR-137791, C&MS 104-r3, Performance Appraisal, Ranking and Salary Procedures, February 25, 2000
- UCRL-MI-135938, CMS 710-r0, Joint Management Agreement for Legacy Building (222), April 26, 1999

- C&MS 802-r1, Training Program, October 10, 1997
- C&MS The 2000 CMS Training Formal Assessment Report, March 24, 2000
- C&MS CDhED Self-Assessment on Training, May 8, 2000
- C&MS Work Authorization Checklist, undated
- C&MS OSH Accident, Injury, and Illness records for 1998, 1999, and 2000
- C&MS Complex 132N FSP, September, 2000
- C&MS Facility 151 Complex FSP, December, 1999
- UCRL-MI-139323, C&MS 725 r0, Memorandum of Understanding for Occupancy of Space in B151
- C&MS Change to FSP 151, September 8, 2000
- C&MS Hazard Analysis Report B151 Complex, September 8, 2000
- C&MS OSP 132N.29, February, 2000
- UCRL-MI138963, C&MS 717 r0, MOU Between SAT and ES&H Team 4 for ES&H Support Staff, October 5, 1998
- C&MS 331-r0, Accident/Injury Prevention Program, March 27, 2000
- C&MS Self-Assessment of Biohazards, March 29, 2000
- C&MS ANCD Self-Assessment of IWS coverage for ANCD-managed activities, March 13, 2000
- C&MS, 2000 CCHeD Health Communication/Chemical Hygiene Plan Self-Assessment, June 5, 2000
- C&MS, MSTD Readiness for ISM Verification Reviews, September 7, 2000
- C&MS ES&H Team 3 Discipline Action Plan, December 1, 1999
- HCD Department Policies and Procedures, Sections 3.23.1, 3.23.2 and 3.28, undated
- Materials Distribution Division (MDD) Operating Procedure 301.1, Basic Receiving & Distribution, July 11, 2000
- MDD Operating Procedure 200.9, Chemical Spill Response, August 28, 2000
- MDD Operating Procedure 302.16, Infectious Substances and Etiologic Agents, March 29, 2000
- LLNL Work Smart Standards Webpage, September 15, 2000
- LLNL Institutional ISMS Gap Analysis, September 11, 2000

<u>Interviews Conducted</u>:

- Alternate Facility Point of Contact (FPOC) for Laser Programs
- ES&H Manager/NIF Programs
- FPOC for NIF/LS&T/ICF Programs
- CMS Operations Manager for Buildings 825, 826, 827
- CMS Site 300 Room Responsible Person, Building 825
- Site 300 Facility Manager
- EPD Training Group Leader (Acting)
- Assurance Manager for the Environmental Protection Division (EPD)
- B-194 Technical Director
- Industrial Hygienist, ES&H Team 2 (Lasers)

- B-132N Facility Manager and Facility Point of Contact
- B-197 Facility Manager and Facility Point of Contact
- B-132N Research Scientist and Responsible Individual
- Site 300 Manager
- DOE Facility Representative at Site 300
- B-197 Responsible Individual
- Assurance Manager for Laser Programs
- Assurance Manager for NIF
- Assurance Manager for Physics
- Principal Investigator for B-194
- ES&H Team 3 Deputy Laser Safety Officer
- Physics Directorate Safety Support Officer
- AD Facility Manager and FPOC for Laser Programs
- DOE Safety Analysis Document Coordinator for B-194
- B-298 Responsible Individual
- Mechanical Technologist for B-197
- Responsible Individual for B-197
- BBRP Assistant to the Associate Director for Facilities and Safety
- BBRP Assistant Genomics Division Leader/Institutional Biosafety Committee Member
- BBRP Environment and Safety Officer
- BBRP Employee Safety Committee Chair
- BBRP Biomedical Scientist
- C&MS Deputy Associate Director for Operations
- C&MS Deputy Associate Director for Planning, Development, and Personnel
- C&MS E&SH Ramrods (2)
- C&MS ISM Project Manager
- C&MS B132 Facility Safety Committee Chair
- C&MS B151 Facility Safety Committee Chair
- LLNL Respiratory Protection Program Administrator
- Environmental Protection Division (EPD) Group Leader/CHEMTRACK Administrator

<u>Observations</u>:

- Site 300 Chemistry and Material Sciences Areas, General Observations
- Chemistry and Material Science Facility Safety Meeting, B-132N, September 14, 2000
- B-298, Laser Target Fabrication Facility, Interferometer and Laser Operations, September 14, 2000
- B-132N Operations in Room 2895, September 13, 2000
- B-197 General Operations and Laser Research, September 14, 2000
- B-194 Falcon Laser and LINAC Accelerator , 100 MeV Electron-Positron LINAC Operations, September 13, 2000
- B-341 General Operations and Gas Gun Shot, September 15, 2000
- Contained Firing Facility (CFF) construction site tour, September 11, 2000.
- Weekly C&MS Deputy Division Leaders/Operations Meeting, September 12, 2000

- C&MS Weekly Occurrence Report Analysis Meeting, September 14, 2000

Discussion of Results:

1. **Contractor procedures for planning and conduct of operations, including programmatic experimental activities, are in place and ensure: (1) the scope of the work is defined, (2) work planning includes adequate hazards identification and analysis from all appropriate disciplines; (3) appropriate controls to the tasks being performed are developed with worker involvement; and (4) these controls are integrated at the workplace with other safety disciplines and with the mechanisms or processes for gaining authorization to commence work.**

The Laboratory manages its workplace hazards using a graded approach. The IWS is used by the authorizing organization both as a screening mechanism to ensure the appropriate amount of effort and support is used during the work planning process and as a mechanism to record that the work has been authorized and is ready to proceed. During document reviews of randomly selected IWSs, it was determined that facility management reviewed the worksheet and concurred that the work may be performed in the facility. Below is a detailed discussion derived from observations, interviews, and document reviews (hardcopy and web-based information) for each Directorate analyzed.

Physics Directorate

Review of the Physics ISMS Implementation Plan and Physics Directorate Integrated Safety Management System Handbook verified that Physics work planning and work control instructions were consistent with the LLNL institutional guidance and ES&H Manual.

Responsible Individuals (RI) located in the Physics Directorate work in conjunction with ES&H Team 3 and Physics Safety Support Officers (SSO) to process Integration Worksheets, prepare OSPs, and review FSPs. Physics has a good grasp of defining and planning work. Observations of the SSO and various ES&H technical staff showed that the SSO has a broad base of facility knowledge and ES&H professionals maintain expert based knowledge in their assigned areas. SSOs work well with the Facility Point of Contact who is responsible for overall safety in assigned facilities. During interviews with RIs and FPOCs from B-194 and B-341 it was evident that Physics has done a comprehensive job in conveying responsibilities for implementing the requirements to plan and conduct programmatic and operational work. Furthermore, several Physics Memorandums of Understanding between C&MS, Engineering, and Laser Programs were reviewed and found to be comprehensive enough to define adequate technical and safety oversight from matrix organizations.

Review of Physics FSPs and OSPs verified that these documents followed institutional procedures for development and assure safe operation of the facility. Review of Physics IWSs and interviews with Physics RIs, matrixed RIs (e.g. Engineering and Laser Programs), and employees working in operations authorized by an IWS verified that workers are involved in defining the scope of work and identifying associated hazards and controls. IWSs were found to be consistent with

information provided in the FSP.

Physics has employed the use of the institutional IWS at both facilities reviewed under their purview. Physics also has incorporated an additional measure in which a Notice to Proceed is required before any RI or researcher can initiate work. The Notice to Proceed is the final quality control checkpoint in the work planning process before work begins. For example, in B-194, a Notice to Proceed was required for temporary laser controls during a UV operation. This allowed the B-194 Technical Director to complete a detailed look at the system status, staff training, and any additional scope of work before the project begins. This step informs senior management and safety support personnel that the project is about to commence. In other reviews of Notices to Proceed, a Facility Coordinator can describe and emphasize certain parts of the IWS before work begins. IWS 991013 discussed the use of an acid rinse as a precaution to employees to use due diligence and stay within the requirements of the FSP. The Notice to Proceed also acts as a reminder to work safely when documentation has been shelved and is now back in service over an extended period of time. **(Strength SME 2.1)**

Discussions with Physics AD Authorizing Individuals, Responsible Individuals, and employees confirmed that the IWS process is sufficiently mature as a process and in practice, work is appropriately authorized, line managers are appropriately informed, and controls are in place prior to authorization.

BBRP

Review of the BBRP ISMS Implementation Plan and BBRP Integrated ES&H Program Management Plan verified that BBRP work planning and work control instructions were consistent with the LLNL institutional guidance. The Integrated ES&H Management Plan instructs BBRP RIs to utilize the institutional IWS for obtaining authorization to conduct any work not commonly performed by the public.

In addition, all BBRP work involving recombinant DNA or biohazards is reviewed by the LLNL Institutional Biosafety Committee (IBC) prior to development of an IWS for that activity. Federal regulations require the IBC to review any proposed work with microorganisms listed as "select agents" by the Center for Disease Control and Prevention (CDC), as well as all recombinant DNA research. Approval from the Institutional Review Board (IRB), to ensure human subject protection, also may be required if clinical materials are obtained from human volunteers. The IBC is responsible for determining whether the proposed activities comply with applicable rules and regulations for biosafety containment levels, facility practices and procedures, training, and personnel expertise as set forth in the National Institutes of Health (NIH) guidelines. The IBC is LLNL's point of contact for registering the facility with the CDC for use of select agents.

Review of BBRP FSPs and OSPs verified that these documents followed institutional procedures for development and assure safe operation of the facility. Review of BBRP IWSs and interviews with BBRP RIs and employees working in operations authorized by an IWS verified that workers are involved in defining the scope of work, identifying associated hazards and controls. IWSs were found to be consistent with information provided in the FSP.

Consistent with LLNL policy, the BBRP Integrated ES&H Program Management Plan requires ES&H Team review prior to approval of any IWS. Discussions with RIs and employees also indicated that expert assistance from the ES&H Team 2 is provided for all work requiring an IWS. The BBRP Environment and Safety Officer provides an important interface between the BBRP researchers and the ES&H Team professionals, assuring that technical information important to safety is effectively translated between the two groups. When multiple hazards are anticipated in an operation, appropriate expertise is provided by ES&H Team 2 professionals to assure controls measures are effectively integrated. IWSs are not approved until all designated ES&H Team professionals have concurred on the controls indicated on the IWS. An example of effective horizontal integration of control of biological hazards is BBRP and ES&H Team 2 assistance in developing the LLNL procedures to handle damaged/leaking containers of etiologic and infectious agents received by the Materials Distribution Division.

Review of the LLNL Work Smarts Standards (WSS) webpage listing on September 11 revealed that four current standards applicable to work involving biological materials were not listed. Further investigation revealed that the Institutional Work Smart Standards webpage had not been updated since March 15, 2000. The complete WSS set was available under Appendix G of the contract; however, confusion might result among users of the WSS webpage. The WSS webpage was updated September 14, 2000 after discussions with LLNL Management.

Discussions with BBRP Authorizing Individuals, Responsible Individuals, and employees confirmed that the IWS process is sufficiently mature as a process and in practice, work is appropriately authorized, line managers are appropriately informed, and controls are in place prior to authorization.

C&MS

Review of the C&MS ISMS Implementation Plan verified that C&MS work planning and work control instructions are consistent with the LLNL institutional guidance. C&MS has developed an electronic C&MS IWS which is to be used by all C&MS RIs. Extensive instruction on developing project proposals, work planning, and IWS form completion is also provided on the C&MS Focus on Safety webpage. The C&MS ES&H Ramrods also have provided training to C&MS RIs on how to prepare an adequate description of proposed work activities so as to assist IWS hazard identification and analysis processes. As noted above in BBRP, all C&MS work involving recombinant DNA or biohazards is reviewed by the LLNL Institutional Biosafety Committee.

Review of C&MS FSPs and OSPs verified that these documents were developed in accord with institutional instructions and assured safe operation of the facility. Review of C&MS IWSs and interviews with C&MS RIs and employees working in operations authorized by an IWS verified that workers are involved in defining the scope of work, identifying associated hazards and controls. IWSs were found to be consistent with information provided in the FSP.

The C&MS ISMS Implementation Plan specifies that ES&H Team concurrence is required for activities at the WAL-2 level and above. Discussions with RIs and employees also indicated that expert assistance from the ES&H Team 3 is provided for all work requiring an IWS. The C&MS ES&H Ramrods also provide an important interface between the C&MS researchers and the ES&H Team professionals, assuring that technical information important to safety is effectively translated between the two groups. When multiple hazards are anticipated in an operation, appropriate expertise is provided by ES&H Team 3 professionals, to assure controls measures are effectively integrated. IWSs are not approved until all designated ES&H Team professionals have concurred on the controls indicated on the IWS.

Discussions with C&MS AIs, RIs, and employees confirmed that the IWS process is sufficiently mature as a process and in practice; work is appropriately authorized, line managers are appropriately informed, and controls are in place prior to authorization.

Laser Programs

Review of the Laser Programs ISMS Implementation Plan and Laser Directorate Integrated Safety Management System Reference Guide verified that Lasers work planning and work control instructions were consistent with the LLNL institutional guidance and ES&H Manual.

LLNL and DOE OAK has also selected a set of Work Smart Standards (WSS) that are necessary and sufficient to protect people and the environment from hazards associated with its work activities. The controls from the WSS are either contained in or referenced in the ES&H Manual and were verified to be in the Laser Programs safety documentation.

Review of Laser Programs FSPs and OSPs verified that these documents followed institutional procedures for development and assured safe operation of the facility. Review of Lasers IWSs and interviews with Lasers RIs and employees working in operations authorized by an IWS verified that workers are involved in defining the scope of work, identifying associated hazards and controls. It was clear that the objective of the LLNL work planning process, in Laser Programs, is to ensure the hazards associated with the work activity are clearly understood and appropriately addressed. OSPs specifically reviewed were from B-298, Laser Target Fabrication Facility, and B-197 General Operations.

During facility walkthroughs and observations in the Laser Directorate, the Review Team verified Authorizing Individuals (AI) and Responsible Individuals (RI) have shown they can work with ES&H Teams and Subject Matter Experts as needed to ensure that all applicable controls are identified and appropriately tailored to the work activity. RIs in B-298 and B-197 were queried about the interaction between FPOCs, Facility Managers, SME for Laser Safety, and Program Line Management. All clearly identified the chain of command to prepare work and to receive the proper authorization to initiate work in a room or facility. Several had daily interactions on IWSs, FSPs, and OSPs in regards to requirements, standards, upcoming reviews, and safety walkthroughs by the Laser Assurance Manager and also the DOE Facility Representative. A good working relationship has developed between DOE and the Assurance Manager through conversations, self-assessment walkthroughs, and DOE safety audits.

In the near future, Laser Directorate is splitting into a NIF Directorate and the remaining portions will recombine with Physics to become PAT-Lasers/Physics. Furthermore, the Physics Directorate will recombine with the remaining portions of Laser Programs to become the Physics and Applied Technologies Directorate (PAT). Some uncertainties exist in combining the two Directorate's Assurance Manager areas, but no underlying concerns have been identified at this time. In fact, both Directorates have agreed to take the outstanding portions of the Safety Support Officer structure and the Notice to Proceed and incorporate them into the strengths of the Laser Programs Assurance Managers oversight functions. The new Directorate (Laser Programs/Physics) is slated to begin on October 1, 2000. At that time NIF Programs will be responsible, separately, from Laser Programs to provide ES&H, Assurance Management, and Safety Support for those facilities transferred to the NIF Directorate. It is too early to determine the integration concerns that may arise between the combination of Lasers and Physics Directorate, and this CRAD will not discuss further those aspects regarding ISM implementation.

Discussions with Laser Programs AIs, RIs, and employees confirmed that the IWS process is sufficiently mature as a process and in practice; work is appropriately authorized, line managers are appropriately informed, and controls are in place prior to authorization.

2. Contractor procedures for conduct of operations, including programmatic experimental activities, are in place and effectively implemented to ensure that controls are implemented prior to commencing work and that these controls remain in effect so long as the hazard is present.

Work involving activities that potentially have ES&H concerns beyond those commonly encountered and performed by the public (WAL 1) require ES&H review and authorization which is documented on the Integrated Work Sheet.

An individual may initiate and perform a work activity without the imposition of formal work controls if it involves only activities commonly performed by the public as defined in the ES&H Manual. The Manual states "in no instance shall an individual initiate or perform a work activity not performed by the public without the approval of an appropriate person in their management chain." The Authorizing Individual fulfills the role requiring a final review of an IWS to ensure that controls are integrated into the workplace. Per the Directorate Implementation Plans, it is the responsibility of the organization authorizing work to ensure that the greater the hazards associated with an activity the more rigorous the work planning process that will be required. LLNL ensures this objective is being met by employing relevant ES&H professionals from Engineering, Hazard Controls, ES&H Teams, and Subject Matter Experts during the work planning process. ES&H professionals and SMEs concur on many of the IWS reviewed. Documentation, observations of work, and interviews from all four Directorates proved that work is controlled prior to initiation and controls remain in effect while the hazards are present.

Physics

The Physics Directorate ISMS Handbook describes work controls that must be in place before

work can commence. The Physics ISMS Implementation Plan further describes the details to ensure that the controls remain in effect so long as the hazard is present. It is the Notice to Proceed accompanied by the IWS that initiates work in a Physics facility.

The Review Team conducted interviews to verify that the documentation is, in fact, used in the research and development laboratories and by technicians, RIs, FPOCs, and Safety Support Officers. Several interviews with former B-212 employees (now in B-341) have indicated that IWSs are used extensively to control the hazards on gas guns, laser systems, heavy ion fusion experiments, and general physical experiments. Discussion with employees was initiated to determine if an IWS was created, used properly, and a post job critique was completed upon the transfer of several projects from B-212 to labs in B-341. Employees were cognizant of the IWS process; the particular IWS involved in transportation of gas guns, EBIT projects, and related infrastructure items that were moved to this facility in the past few months. In addition to the IWSs, the Safety Support Office of Physics conducts self-assessment walkthroughs in conjunction with the Assurance Managers Office to understand and document compliance with IWSs, OSPs, and FSPs.

The FSPs and OSPs reviewed were sufficient enough to identify the hazards and to require proper controls on new projects. A Notice to Proceed was completed for each IWS reviewed. Employees interviewed indicated that AIs verify all controls are in place prior to authorizing work to begin, and SSOs routinely check to assure that controls remain in place while conducting safety audits with the FPOCs. In instances where controls may be lacking or documentation unsupportive of safety initiatives, a stop work is issued. The acting Assurance Manager was asked to describe the process for stop work and define the requirements for each employee in case of imminent danger or environmental release. All employees interviewed in Physics could also identify when a stop work is needed and how to handle it through the appropriate line management.

Overall, Physics Directorate has shown for experimental and research activities that plans are in place to effectively control work prior to final authorization and that controls do remain in place as long as hazards are present under the IWS.

BBRP

Review of BBRP IWSs, interviews with employees and observations of BBRP operations verified that work was being conducted in accordance with applicable IWS controls. Employees understood, however, that an IWS did not provide authorization to conduct work. Employees interviewed indicated that AIs verify all controls are in place prior to authorizing work to begin, and RIs and Room Responsible Persons (RRP) routinely check to assure that controls remain in place and are functioning properly. The BBRP Self Assessment Plan also requires that supervisors formally review the ES&H aspects of all activities under their responsibility once a month. The 1999 Annual ES&H Report for BBRP, dated May 30, 2000, stated it was too early in the program to adequately assess the implementation and effectiveness of this activity. The BBRP Environment and Safety Officer also conducts frequent surveys of laboratory and offices to assure controls measures are being implemented. In addition, the ES&H Team 2 Technicians

conduct periodic reviews of control measures for BBRP operations in accordance with their Discipline Action Plan. The BBRP Employee Safety Committee also conducts an annual safety assessment of all BBRP operations; the results of any open items from the committee assessment are recorded in BBRP DefTrack for resolution.

C&MS

The C&MS ISMS Implementation Plan instructs the RI to periodically monitor the work to ensure safety procedures are being followed, work is within authorized scope and safety basis envelope, the work activity's safety performance is strengthened, and changes to personnel, procedures, or equipment are properly recognized and addressed. The C&MS E&H Ramrods also conduct frequent surveys of laboratory and offices to assure controls measures are being implemented. In addition, the ES&H Team 3 Technicians conduct periodic reviews of control measures for C&MS operations in accordance with their Discipline Action Plan.

Review of C&MS IWSs, interviews with employees, and observations of C&MS operations verified that work was being conducted in accordance with applicable IWS controls. Employees understood, however, that an IWS did not provide authorization to conduct work. Employees interviewed indicated that AIs verify all controls are in place prior to authorizing work to begin, and RIs and RRPs routinely check to assure that controls remain in place and are functioning properly. The C&MS electronic IWS also contains a required field for concurrence by the RRP to assure that room conditions have been evaluated to ensure that the proposed work will not impact existing operations and specified controls are in place.

C&MS facility inventories are maintained utilizing the LLNL CHEMTRACK system. This database was developed to facilitate meeting environmental chemical reporting requirements. The system has progressed to include a room level inventory of all primary containers of hazardous materials on LLNL; the database information is verified by an annual physical inventory. CHEMTRACK is being expanded to include the Material Safety Data Sheet database for all chemicals used at the lab and is being integrated with Procurement to institute controls on chemical purchase and distribution. CHEMTRACK is also being used as a source of information to assess facility safety basis envelopes (SBE).

Pursuant to Appendix G of Section 6.06, Safety Analysis Program of the ESH&H Manual, Facility Managers must be aware of current chemical inventories to assure specific chemicals do not exceed established parameters. CHEMTRACK will serve as the source of information for facility chemical inventories. Under an interim C&MS process currently in draft, RIs will be charged with assuring any purchases of new or currently approved chemicals do not exceed the parameters established in Section 6.06. This process for maintaining the C&MS facility chemical SBE has yet to be implemented.

Laser Programs

Changes in operations that affect safety and environmental controls for an FSP require than an IWS be submitted to the FPOC. The RI insures that new hazards and controls identified in the

IWS are documented in a change to an FSP. Several Change Memos in B-179 were reviewed. In order for a change memo to be approved, the Facility Manager and appropriate program and support personnel must be consulted. Furthermore, a facility inspection is required for each IWS submitted and facility personnel must also be interviewed on the current FSP and/or OSP. A CHEMTRACK listing of chemicals is attached to the proposed change to verify that no chemical is beyond FSP or OSP binding limits.

In Laser Programs, Responsible Individuals maintain a current "Official Copy" of OSPs at the work area for reference by personnel. This was verified during walkthroughs of B-197 and B-298. The FPOC also has immediate access to safety documentation on the web. Building 298 safety documentation was reviewed during a walkthrough of laboratory operations. A book is maintained that includes the FSP/OSP documentation, IWS, relevant ES&H Manual Chapters. This provides a single source document for any researcher needing information on B-298 safety basis and requirements including points-of-contact.

3. Contractor procedures are in place, implemented, and provide mechanisms or processes for gaining line management authorization to perform work.

All work control processes were found to contain mechanisms for obtaining line management authorization to perform work although a graded approach is applied as to what level of hazardous work requires a specific activity level authorization. LLNL ensures that facilities are properly managed, coordinated, and conducted through the use of FPOCs, which are identified by the Associate Directorate for Facility Management. In each of the facilities toured by the Review Team, a FPOC was identified as required by the ES&H Manual Section 1.3.8. All four Directorates analyzed were similar in providing for work authorization by line management.

Physics

The Physics Directorate ISMS Implementation Plan, Table 4, describes work activity authorization structures. For each work authorization level (Levels 1-4), an approval authority is listed along with the concurrence required for each type of job. For WAL 1 (work commonly performed by the public), an RI may sign off on all work activities. For WAL 2-4, the Project Leader, the FPOC, and the ES&H Team Leader must also sign that the work is safe to perform. For WAL 4 or higher a Prestart Review is required.

During observations and interviews in B-341, several questions on Prestart Reviews were asked. The employees understood the requirements to begin a Prestart Review and in fact had done so on their projects. The Safety Support Officer was also aware of the requirements for a Prestart Review. However, the Review Team did not perform a review of Prestart related documents due to time constraints.

The Principle Investigators (PI) and RIs are required to ensure that workers understand the requirements of the FSP and any applicable OSPs including basic emergency procedures. These are explained during the prestart review and any revisions of the OSPs, usually on an annual basis. When there is a need to suspend work for safety concerns, employees are required to put the

facility in a safe configuration, where possible. The suspended work authorization is discussed in formal training and OJT by either an FPOC or PI. Most employees noted that they have discussed stop work with supervisors.

BBRP

The BBRP ISMS Implementation Plan assigns the Associate Director the responsibility for authorizing moderate-risk activities, work authorization level (WAL)-5 and 6 and high profile IWSs. Division Leaders have the authority to approve IWSs at WAL-4 and below, all BBRP IWSs are approved by the Division Leader or higher. The ISMS Implementation Plan also requires RIs ensure their work activities have been authorized by the appropriate management level prior to commencing work. RIs must also ensure personnel supporting their work activities are properly trained and qualified.

Interviews with RIs and employees verified that AIs formally verified controls were in place prior to authorizing the work described on the IWS. BBRP procedures do not call for any documentation of AI verification of the controls other than their signature on the IWS. Employees stated that AIs verified controls such as safety glasses, gloves and lab coats were in fact present in the work area prior to authorizing work to begin. Employees also indicated that they felt free to discontinue work and contact their supervisor in the event that unexpected conditions arose that posed hazards not addressed on their IWS.

C&MS

The C&MS ISMS Implementation Plan designates specific authority delegation for work authorization based on the WAL. The C&MS Implementation Plan also points out the requirement to conduct a pre-start review as outlined in the ES&H Manual, Volume 1, Chapter 2 and provides an optional Work Authorization Checklist that AIs may use to ensure key points are considered before the work is authorized.

Interviews with RIs and employees verified that AIs formally verified controls were in place prior to authorizing the work described on the IWS. Employees also indicated that they felt free to discontinue work and contact their supervisor in the event that unexpected conditions arose that posed hazards not addressed on their IWS.

Laser Programs

Laser Programs FPOCs serve as the Responsible Individuals for facility-related activities and are delegated the authority to authorized low risk (WAL 1-3) facility related activities. FPOCs concur that the work can be safely performed in the facility through the IWS process. They are also responsible, as line management, for any facility controls and special conditions including unacceptable collateral effects that might be associated with proposed work.

For higher hazard facilities (WAL 4-6), an Authorizing Individual is responsible for implementing and providing mechanisms to perform work. The Laser Programs ISMS Plan describes these

duties as delegated from the Program Leaders. Several RIs were interviewed from B-197 and B-298 on how to gain approval of an OSP, FSP, and IWS. B-298 RIs and FPOC were well versed on the requirements, documentation, and management chain to obtain line management approval.

Section 1.7 of Laser Programs ISMS Plan contains conditions for stopping work. Each employee interviewed in B-298, along with the Assurance Manager, was aware of how to stop work and report it to line management.

4. Contractor mechanisms for the control of facility work and programmatic activities specify that line management is responsible for safety and are implemented.

The ES&H Manual, the ISMS Implementation Plans, the Facility Safety Plans/Procedures, and the Operational Safety Procedures contain specific assignments and general reference that specify line management is responsible for safety. Several Program Plans in BBRP and C&MS contain similar references to line management responsibilities for safety.

Physics

Per the Physics Implementation Plan, Section 3.2, the Associate Director is accountable to the Laboratory Director and sponsoring organizations for the safety of work performed by Directorate personnel or in Directorate facilities. The AD is responsible for establishing expectations and enforcing accountability for facility work and programmatic activities.

Principle Investigators (PI) are responsible for all operations conducted in a laboratory as assigned. If a PI appoints a RI for day-to-day supervision of an activity, the PI retains accountability for the safety of the work. A RI was interviewed on the safety responsibilities of her facility in B-197, a previous physics facility. She stated that safety is everyone's responsibility and she reports safety issues to the FPOC and RI if they arise. Several delineations in the Physics documents put safety oversight at senior line management levels. However, all employees interviewed from the Assurance Manager, RIs, FPOCs, and technicians stated that it is their responsibility to ensure a safe working environment. Nowhere in the Physics documents, however, does it say directly that individual employees are responsible for safety. All are delegated from the AD level to some lower level management position.

BBRP

The BBRP ISMS Implementation Plan and Integrated ES&H Program Management Plan specify the roles, responsibilities and authorities for individuals conducting work and managing BBRP facilities. As delineated in these BBRP plans, management is responsible for verifying that all controls are in place and effective prior to for authorizing the conduct of work and the responsible management chain is shown on the IWS. The management chain is also responsible for assuring that adequate resources are available to safely conduct the proposed work and complete it without leaving a hazardous legacy. These responsibilities are also contained in the LLNL ES&H Manual. Interviews verified that BBRP employees felt that line management was ultimately

responsible for safety, while also understanding their personal responsibility for their own safety and the safety of others working in their area.

C&MS

Similarly, the C&MS ISMS Implementation Plan specifies the roles, responsibilities and authorities for individuals conducting work and managing C&MS facilities. As delineated in these C&MS plan, management is responsible for verifying that all controls are in place and effective prior to for authorizing the conduct of work and the responsible management chain is shown on the IWS. The management chain is also responsible for assuring that adequate resources are available to safely conduct the proposed work and complete it without leaving a hazardous legacy. The C&MS electronic IWS automatically identifies the appropriate C&MS management chain based on form inputs; the management chain field is not editable. Interviews verified that C&MS employees felt that line management was ultimately responsible for safety, while also understanding their personal responsibility for their own safety and the safety of others working in their area.

Laser Programs

The Laser Programs ISMS Implementation Plan states that "Safety begins and ends with the worker 'on the floor' conducting the work activity." This ideal was clearly communicated during the interviews in B-298 as each employee relayed the message that it is his or her own responsibility to maintain a safe working environment. In each instance of questioning, employees were able to identify line management responsible for safety. Several were also able to identify specific sections in documents regarding line management's roles in safety. Most of this safety mindset can be attributed to the Assurance Managers Office and the role of the FPOC to keep all employees informed of hazards or unsafe acts in facilities.

5. Contractor personnel who plan, control, and conduct operations are required to have competence commensurate with the assigned responsibilities.

ES&H training requirements are individually developed according to work activities and associated hazards. Employees and their supervisor develop a list of training utilizing an LTRAIN questionnaire. The LTRAIN course requirements and content is based on input from supervisors and ES&H professionals. Changes to IWSs, OSPs or FSPs may precipitate a change in training requirements. LTRAIN procedures call for employee training requirements to be reviewed at least once a year. LTRAIN publishes a monthly training report that is supplied to the Directorates. Supervisors and RIs have access to the training records for their employees to assure all required training courses have been completed.

LLNL institutional processes for designating required training for hazard control on an IWS allow the referencing of FSP training requirements, rather than requiring a list of specific training courses on the IWS. While the practice of referencing the FSP is deemed adequate, newer employees not familiar with the LLNL document hierarchy might be confused by the lack of specificity. As the IWS processing system matures and database connectivity increases, the

laboratory should investigate the capability of providing more specific hazard related training requirements on the IWS.

Physics

The Physics Directorate tries to hire personnel based upon their base skills, knowledge, and abilities (SKAs). All Directorate personnel are required to have the training necessary to perform work in a safe manner. During interviews with employees, it was noted that the Laboratory provides most of the training courses needed to enable its employees to meet safety standards. In other cases, employees keep abreast of regulatory and safety requirements through formal education.

Generally, the Principle Investigator is responsible for identifying the required training for matrix individuals as well as employees working for them. During this review, LTRAIN records were scanned to view all safety training. There are several course requirements to become a qualified FPOC (17 courses) or a RI (slightly less). However, the main course for FPOCs and FMs are not being offered as they are going through major revisions. The ADFPOC course is the cornerstone of the FPOC oversight function and but many have still not received this specific training. This issue was identified in the Phase IIA verification in May 2000 (MGO). The training will not be offered until April 1, 2001 by LLNL.

In most cases, employees were up-to-date on required training identified. General Employee Radiological Training is required for most employees working as researchers and RIs in Physics facilities. However, there is a lapse in LTRAIN documentation since most of the training records reviewed were lacking GERT for 1996 and 1998. LTRAIN for each employee did document that training was taken within the one year refresher limit. This anomaly applies mainly to the Physics Directorate.

During the interview with the B-194 Technical Director, required safety training was discussed that is directly applicable to the Falcon Laser and Accelerator Science. Any training that the Technical Director, requires of his staff, he takes himself. A training records review was completed and this confirmed his management approach to safety training. Training of employees is tracked using a training matrix maintained by the Technical Director. This matrix uses color coding to help determine a training requirement for ISM training as well as technical and safety training. However, On-The-Job training is performed but not documented in any matrix or supplementary diary. In several other discussions with RIs in Physics, OJT is also not documented. **(Issue SME 2.3)** Several OJT courses and sessions are performed by either the RI or the Technical Manager when new employees are entered into the facility.

BBRP

All BBRP personnel interviewed were highly qualified for the position, most possessing advanced degrees applicable to their field, and several had professional certifications. Almost everyone interviewed had extensive experience (> 10 years) as an employee of BBRP. Training records of selected individuals were reviewed and found to be current in training required or recommended on the IWS and FSP applicable to their work activity. Some BBRP activities, such as carcinogen

operations, require an on-the-job training program; however completion of these training activities was not documented (See Physics, Issue SME 2.3 above). The BBRP Safety and Environmental Coordinator indicated on-the-job training completion would be tracked in the future utilizing a locally designated training course number documented in LTRAIN.

The BBRP Training Coordinator conducts a monthly review of a report on BBRP employee training activity provided by LTRAIN. The BBRP Safety and Environmental Officer contacts employees directly regarding training attendance with follow-up to the supervisor if the employee fails to attend overdue training. In some BBRP areas, such as the B364, Room 1523, where a Cesium-137 source is located, the TESA lock prevents employee access to the room if training is not completed in the appropriate time frame.

C&MS

All C&MS personnel interviewed were highly qualified for the position, most possessing advanced degrees applicable to their field, and several had professional certifications. Almost everyone interviewed had extensive experience (> 10 years) as a C&MS employee. Training records of selected individuals were reviewed and found to be current in training required or recommended on the IWS and FSP applicable to their work activity.

The 2000 CM&S Training Formal Assessment Report, March 24, 2000, showed a significant decrease (34% vs 69%) from the 1998 assessment in the percentage of C&MS employees identified in LTRAIN as not current in at least one required training course. All required courses were evaluated, not just ES&H courses. C&MS management continues to emphasize the importance of completing required training.

Laser Programs Programs

In Laser Programs Directorate, all personnel associated with operations in a facility must complete training and required reading per the current OSP. Laser Programs uses a Training Matrix to maintain a listing of who has completed the training identified as essential on the OSP. The Responsible Individuals maintain the database of training compliance for all individuals working under the OSP. Several RIs were interviewed and all were able to produce documentation on staff training. In all cases, the RI was cognizant of any employees non-compliant as documented. A crosscheck was performed using LTRAIN, which confirmed the data presented in the OSP.

Accomplishment of safety training is documented in the Livermore Training Records and Information Network (LTRAIN). Per the ES&H Manual Chapters 2 and 7, all Laboratory employees are to be trained in the principles and functions of ISMS at a level appropriate for their specific job duties and responsibilities. Several Laser Programs employees were interviewed to determine the level and depth of ISMS knowledge. Most could state the required functions of ISM and apply them to daily job requirements. Upon a record review of the same employees, LTRAIN documents supported the formalized training received with the exception of one area. For FPOCs, one class was still deficient: ADFPOC training. (Refer to Physics discussion above).

However, all the FPOCs interviewed were knowledgeable and capable of performing the roles as a point of contact between workers and facility management.

6. Contractor procedures for operations provide for feedback and improvement.

Feedback and improvement, for operations, activities and work control at LLNL is satisfactory. Assurance Managers and other self-assessment personnel help to identify deficiencies and provide feedback through documented mechanisms. Lessons Learned programs are in place and disseminated to line employees either via e-mail or hardcopy documents. Furthermore, several new safety committees are being developed across the four Directorates reviewed that appear to increase employee awareness of safety on the job. Specific examples are given below for Physics, BBRP, C&MS, and Laser Programs Directorates.

Physics

The Assurance Manager is responsible for self-assessments in Physics facilities. In these, self-assessments, deficiencies are identified and noted in the DefTrack System. When deficiencies are found in the area of safety, they are ranked by hazard category (e.g. Level 1-4) consistent with ES&H Manual requirements. Specific DefTrack submissions were not reviewed by Review Team due to time constraints.

The Physics Directorate also maintains a Lessons Learned program coordinated again by the Assurance Manager. Directorate employees may submit lessons learned directly to the Laboratory Lessons Learned Coordinator or to the Assurance Manager. Several employees could not identify the Site-Wide Lessons Learned Coordinator but could identify the Assurance Manager. None of the employees interviewed had submitted a lessons learned to the Assurance Manager. Several employees, however, were aware about the program and have received lessons learned announcements.

BBRP

The BBRP operations reviewed were long-standing activities; therefore, feedback at the activity level concerning operational issues and related controls was limited and tended to be informal discussions between employees and RIs. However, as noted in criteria 2 above, there are frequent formal and informal assessments being conducted by various organizations.

In addition to assessments, the BBRP Employee Safety Committees promotes employee involvement in program development via a monthly award for BBRP Safety Person of the Month, quarterly meetings, postings on the BBRP Safety webpage, and operating a safety suggestion program. This committee has been in existence for nine years and managed by a line BBRP employee for the last two years. The committee's objective is to increase employee awareness of safety both on and off the job and develop creative methods to improve safety. As an example, the BBRP Employee Safety Committee sponsored a lab-wide LLNL Ergonomics Fair. The committee enlisted over 25 vendors to provide demonstrations and information on methods to improve workplace ergonomics. **(Strength SME 2.2)**

C&MS

Similarly, the C&MS operations reviewed were long-standing activities; therefore, feedback at the activity level concerning operational issues and related controls was limited and tended to be informal discussions between employees and RIs. However, as noted in criteria 2 above, there are frequent formal and informal assessments being conducted by various organizations.

Observations of a C&MS Occurrence Review Meeting involving the failure of an uninterruptible power supply (UPS) indicated analysis was in-depth, technically sound, and standards based. When the investigation report is finalized (C&MS is awaiting a report from a consultant expert in UPS), lessons learned will be prepared to advise other LLNL and DOE facilities as to the cause of the incident.

C&MS has recently established Facility Safety Committees (FSC) chaired by RIs and composed of a crosscut of workers from the various occupations and areas of the facility. These committees established under the C&MS Accident/Injury Prevention Program, although new, provide an additional means of employee feedback to C&MS managers. The committees address individual facility issues, review accidents, injuries and near misses, and share information with C&MS employees via a webpage. The FSC chairs provide a briefing on committee activities at the monthly meeting held by the C&MS Deputy Associate Director for Operations.

Laser Programs

Laser Programs Facility Points-of-Contact actively promote and participate in the feedback and improvement process by soliciting feedback and involving facility workers in the analysis of hazards and development of controls. Several of the matrix employees interviewed also provide input into the Laser Programs FSPs, OSPs, and IWSs. The Alternate FPOCs also confirmed that valuable input is received from employees reviewing safety documentation or perceived, unsafe operations.

The Laser Program Feedback and Improvement Plan provides means for ensuring that ISM is implemented to accomplish feedback and accomplish continuous improvement within the Laser Directorate. The Feedback and Improvement Plan requires an employee to immediately stop any activity that cannot be completed safety. Although many of the FPOCs and RIs interviewed under Laser Programs could not identify the specific location of this requirement, all had good knowledge of the procedure to stop work when necessary. Many have exercised this important procedure effectively. When a “stop work” was initiated, fellow workers complied and a follow up lessons learned was usually generated.

The Laser Programs Assurance Manager is well versed in the area of feedback and improvement. A Laser Programs e-mail list disseminates Lessons Learned across the Directorate as needed. Both DOE and LLNL employees subscribed to the Lessons Learned listing. Several times a year, messages are sent out pertaining to Laser Programs, LLNL wide, and DOE complex wide lessons learned. For those Directorate employees that do not have access to LLNL computers, the RI

provides printouts documents for review. Feedback and improvement is further initiated by the use of self-assessment activities also conducted by the Assurance Manager.

The ES&H Manager for NIF has recently instituted a way to receive feedback from RIs. All RIs responsible for OSPs respond to a Quarterly Report on ES&H via e-mail to the NIF Program Office. The form requests input on items such as OSP signature changes needed, ES&H Training compliance, interlock check status, Self Assessments performed, and information on near misses or observed unsafe acts. The ES&H Manager uses this information to trend any emergent issues within his assigned facilities. This information, in roll up, is presented to the Director of Operations for analysis but is not further dissemenated.

Conclusion: Overall, LLNL has provided a method to ensure that controls are implemented during facility, project and experimental operations. Procedures have been identified that provide adequate controls to mitigate the hazards. These same procedures provide assurance that controls will remain in effect so long as the hazards are present. Line managers and employees are responsible for safety. The Objective has been met.

Strength(s):

- The Physics Directorate's use of the Notice to Proceed provides an extra quality control check and a chance for line management to point out important safety work habits or selected hazards on an activity before commencing work. **(SME2.1)**
- The BBRP Employee Safety Committees promotes employee involvement in program development via a monthly award for BBRP Safety Person of the Month, quarterly meetings, postings on the BBRP Safety webpage, and operating a safety suggestion program. **(SME 2.2)**

Issue(s):

- On-the-Job (OJT) training is not documented as part of the training program for new or current employees in the Physics Directorate and BBRP. **(SME 2.3)**

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